

# Novel host associations for the fungus beetles *Cnecosa insueta* and *Thallis vinula* (Coleoptera: Erotylidae: Erotylinae) in Tasmania

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## Abstract

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Novel basidiocarp hosts in the fungal families Fomitopsidaceae and Polyporaceae are documented for two Tasmanian species of fungus beetle (Erotylidae). Large aggregations of *Cnecosa insueta* (Crotch) were found feeding on *Neolentiporus maculatissimus* (Lloyd) Rajchenb and *Thallis vinula* (Erichson) on *Ryvardenia campyla* (Berk.) Rajchenb. Field observations of both beetles and hosts are documented.

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## INTRODUCTION

More than 1500 species of the predominately tropical beetle family Erotylidae (fungus beetles) are known globally, with about 120 recorded from Australia (Lawrence & Slipinski 2013). Australian Erotylidae are mycophagous as larvae and adults, feeding within the fruiting bodies of both Agaricales and Aphyllophorales (mushrooms and bracket fungi; Hawkeswood 1986, 2003; Hawkeswood *et al.* 1997; Lawrence & Britton 1991; Lawrence & Slipinski 2013; Fearn 2017; Webb & Simpson 1991).

Adult beetles range from 4-25 mm in length and are typically boldly coloured with red, orange and yellowish markings on a predominately black background. The biology and habits of most Australian species are poorly documented (Hawkeswood 2003), including the seven species recorded from Tasmania: *Cnecosa insueta* (Crotch), *Episcaphula australis* (Boisduval), *Thallis compta* (Erichson), *T. dentipes* (Blackburn), *T. femoralis* (Blackburn), *T. janthina* (Erichson) and *T. vinula* (Erichson).

Hawkeswood *et al.* (1997) provided a

review of host records for Australian Erotylidae including five of the Tasmanian species: *Cnecosa insueta* from *Hapalopilus* sp. and *Laetiporus portentosus* (Berk.) Rajchenb (as *Piptoporus portentosus*), *Episcaphula australis* from *Trametes coccinea* (Fr.) Hai J. Li & S. H. He (as *Pycnoporus coccineus*), *Leiotrametes lactinea* (Berk.) Welti & Courtec (as *Trametes lactinea*) as well as two unidentified *Polyporus* spp., *Thallia compta* from *Polyporus* sp., *Thallia janthina* from *P. portentosus* and *Thallia vinula* from *P. portentosus* and *Polyporus squamosus* (Huds.) Fr. However, the reference to *Polyporus squamosus* is most likely in error as it is a Northern Hemisphere taxon. It is possible that the very similar looking and native *Neolentiporus maculatissimus* was the polypore host in this instance. More recently, Bashford (2014) reared Tasmanian specimens of *T. femoralis* from *Ryvardenia campyla* and *Fuscoporia wahlbergii* (Fr.) D. A. Reid (as *Pbellinus wahlbergii*) as well as *T. janthina* and *T. vinula* from *Ryvardenia cretacea* (Lloyd) Rajchenb, and Fearn (2017) reared *T. compta* from *Omphalotus nidiformis* (Berk.) O.K.Mill.

*Cnecosa insueta* is an aposematically coloured black and orange erotylid beetle ranging from 9-13 mm in length (Plate 1) occurring in eastern Australia (Atlas of Living Australia (ALA) 2018a; Hawkeswood *et al.* 1997) as well as northern and north eastern Tasmania. The low number of registered Tasmanian specimens in public collections (9) most likely reflects lack of collecting effort rather than an accurate reflection of the range or abundance of *C. insueta*. *Thallia vinula* (Plate 2) is common and

widespread through coastal New South Wales and Victoria, south east South Australia and throughout Tasmania (ALA, 2018b).



**Plate 1.** Adult *Cnecosa insueta* (12 mm total length) on host *Neolentiporus maculatissimus* at Black River Siding, Wiltshire.

Photo: D. Maynard.

## Field observations

### *Cnecosa insueta* (Crotch 1876)

On 06/01/2018 the first author was conducting entomological field work in a highly degraded site that was once a rail siding on the Western Line at Black River, north west Tasmania (GDA94 356887mE 5477062mN). This 5 ha site is bounded by the Bass Highway to the north and Black River to the south. The site was surrounded by sapling regrowth of a range of native trees and shrubs common in the adjacent habitat. The disused rail line runs along the site's northern boundary, and a retaining wall constructed of large-diameter, untreated eucalypt trunks runs adjacent to this line, supporting the raised ex-industrial site. These eucalypt trunks were decomposing, and a large fruiting body (about 300 mm diameter) of *Neolentiporus maculatissimus* was growing on one of

them (Plate 3). A large number of *C. insueta* (Plate 1), were living between the layers of the fruiting body, well back from the outer margin, near the moister, and presumably cooler, centre.

Forty-five specimens of *C. insueta* were collected and lodged in the entomological collection of the Queen Victoria Museum and Art Gallery (QVMAG)(QVM.2018.12.0136-0180).



**Plate 2.** Adult *Thallis vinula* from Trowutta Caves State Reserve, North West Tasmania. Photo: D. Maynard.

### ***Thallis vinula* (Erichson 1842)**

On 27/01/2018 the first and second authors were conducting entomological field work in Trowutta Caves State Reserve, north west Tasmania (GDA94 340947mE 5451483mN) when a number of large fruiting bodies of *Ryvardenia campyla* were observed on a very large,

decomposing *Nothofagus cunninghamii* log on the forest floor (Plate 4). The largest lobes were more than 300 mm across and the narrow spaces between lobe layers contained a range of small Coleoptera including *T. vinula*. Sixteen specimens were collected and lodged in the QVMAG entomological collection (QVM.2018.12.0490-0500 and 0746-0750); several portions of fruiting body were subsequently lodged with the State Herbarium after identification by the third author (HO 593125).

### **Polypore hosts**

The two polypore species are not particularly rare in Tasmania (Gates & Ratkowsky, 2016). *Neolentiporus maculatissimus* appears to prefer an open habitat on substrates such as old bits of timber, e.g. railway sleepers, left lying around or logs alongside a track in wet sclerophyll forests. *Ryvardenia campyla* prefers a wetter habitat and is commonly found on logs of *Nothofagus cunninghamii* in rainforests, although not exclusively.

Records in the Atlas of Living Australia (ALA) show both species are widespread within Australia; *R. campyla* has been recorded in Tasmania, Victoria, New South Wales, Queensland and Western Australia (ALA, 2018c) and *N. maculatissimus* has been recorded from Tasmania, Victoria and New South Wales (ALA, 2018d). The two species also occur in New Zealand and the southern regions of Chile and Argentina (Patagonia), which may reflect our Gonwandan connections.

Both species cause a brown rot and have soft annual fruiting bodies, unlike the

harder persisting brackets of polypores like *Fomes hemitephrus* (Berk.) Cooke and *Ganoderma australe* (Fr.) Pat., which are also common in Tasmanian forests and can last for many years.

## Discussion

Given the concentration of adult Erotylidae on the fruiting bodies as described above, the authors suggest these observations and collections represent feeding and reproductive activities of both *C. insueta* and *T. vinula* on host species. The observations are consistent for both these species as well as other Australian Erotylidae on host fungi as described by Hawkeswood, (1986, 2003); Hawkeswood *et al.* (1997),

Bashford (2014) and Fearn, (2017) where adults appear to be strongly attracted to the smell of recently emerged fruiting bodies for the purposes of feeding and mating.

Little is known about Tasmanian mycophagous insects and a great deal could be learned by collecting fruiting bodies and rearing out the associated insect species. We suggest following the successful guidelines of Bashford (2014) and Schigel (2008) for rearing fungivorous insects. It is important to lodge voucher specimens of both reared species and fungal hosts with recognised institutions (museums and herbariums) with as much associated information as possible.



**Plate 3.** Large fruiting body (c 300 mm diameter) of *Neolentiporus maculatissimus* growing from decomposing eucalypt log at Wiltshire, north west Tasmania. Photograph: D. Maynard.





**Plate 4.** Large fruiting bodies (largest lobes >300 mm diameter) of *Ryvardenia campyla* on decomposing *Nothofagus cunninghamii* log. Trowutta Caves State Reserve, North West Tasmania. Photograph: D. Maynard.

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